target aquifer depths. The maximum practical distance for HDD application of this type (groundwater collection) is approximately 1,000 feet at former Fort Ord.

Radial wells operate by first installing a caisson to the target groundwater production depth (approximately 50 feet below sea level for the 95-10 Project area) and horizontally drilling or jacking wells in a radial fashion into the target formation. Radial well technology is well understood but generally expensive. At Fort Ord, radial well completion cost would be more expensive given the depth of caisson required to reach the target groundwater zone. Ground surface elevations at potential well sites range from about 60 feet to 80 feet. Within a limited construction footprint, radial wells can produce large quantities of groundwater. The maximum practical distance wells can be horizontally advanced from the caisson is approximately 200 feet.

Conventional wells drilled into the Dune Sands or 180-foot aquifer present a significant cost opportunity when compared to other drilling technologies. Conventional wells can be used to produce water from the Dune Sands or the 180-foot aquifer. To supply the fully contemplated 95-10 Project capacity from the Dune Sands using conventional wells would require a large number of potential sites.

Policy and Regulatory Issues

The development of potential policy and regulatory constraints has been a two step process. The first step was to reconsider the location and nature of the structural features of the project. MPWMD staff and consultants met to review the project features developed in 2002-2004 and to discuss changed circumstances and new information developed since that time that would influence the project's location and design. This effort included participation in a design charrette. With the information from this first step, staff and consultants participated in a series of meetings with key planning, regulatory and resource agency staff. At these meetings, the consultants presented project locations and design information to the agency staff and asked questions about potential policy and regulatory issues that would affect the success of the 95-10 Project. A series of project designs and locations were discussed. The information gathered in those meetings and information collected through additional research is the basis for this constraints discussion.

Land Use

Concerns with land use planning consistency and compatibility are primarily the responsibility of the land use planning bodies in the project area. The principal entities are Sand City, DPR and the California Coastal Commission (CCC). On private property, the land owner is also a major factor in determining the feasibility of constructing water supply facilities.

Sand City. Sand City was the principal site investigated for feed water collection and water treatment in the 2002-2004 study conducted for MPWMD (Jones & Stokes 2004). The collection facilities were located west of Highway 1 in the vicinity of Seaside State Beach. In meetings with Sand City staff in June 2008, it was determined that Sand City had its own desalination project in the early stages of construction near this Seaside State Beach location (Figure 3); staff were opposed to any new project being constructed in the area that would adversely affect the groundwater extraction facilities. Sand City staff also indicated that other properties within the city limits along the coast were in various stages of development and would be unlikely locations for MPWMD desalination facilities. Proposals to place such facilities in the coastal area would likely require a coastal development permit, zoning amendment, design and encroachment permits, and possibly a general plan amendment. The Sand City staff also indicated that there were no remaining one-acre parcels in the city limits that would be available for a desalination water treatment facility (Matarazzo, Simonich, Heisinger pers. comm.).

California Department of Parks and Recreation. DPR currently manages all of the former Fort Ord land west of Highway 1. It is planned as the Fort Ord Dunes State Park (Park). These lands are still in Army ownership, but are set to be transferred to DPR in the near future. Currently, any proposed third party actions within the Park require Army review and approval. Any use of the former Fort Ord wastewater treatment plant (WWTP) site would also require approval from Marina Coast Water District (MCWD), as it holds an easement on this property (Gray, McMenamy, Palkovic pers. comm.).

The principal land use policy issues that exist with placement of desalination facilities on DPR property are consistency with planned park uses and habitat restoration plans. Any facilities constructed in the Park would need to be placed in areas planned for development in the Park general plan. The general plan identifies four significant development zones within the park, allowing adequate space to accommodate radial or conventional groundwater extraction wells (see Figures 3 and 4 for development zones). These sites are designated for a variety of visitor-serving uses, including utilities (Environmental Science Associates 2004). Conversations with DPR staff in Monterey did not indicate that extraction wells would be prohibited if they were located in these zones (Gray pers. comm.). Facilities proposed for areas outside of the development zones would interfere with planned habitat restoration or would impact existing sensitive habitats and would be discouraged.

A third policy concern raised by DPR staff relates to placement of permanent infrastructure within state parks as a general practice. Problems with abandoned third-party infrastructure in state parks have resulted in a general opposition to the introduction of new third-party structures. It would be necessary to seek approval from regional- or state-level managers to determine whether specific projects would be allowed (Gray pers. comm.).

From a regulatory perspective, well construction on DPR property would require a lease. DPR cannot issue a lease for more than 5-10 years; any lease longer than that would have to be issued by the State Department of General Services. This

was not described as a "fatal flaw" for the MPWMD project being considered (Gray, McMenamy, Palkovic pers. comm.).

California Coastal Commission. The CCC regulates coastal development through authorities contained in the California Coastal Act (CCA). The 95-10 Project, whether located within Sand City or Fort Ord Dunes State Park, would require issuance of a CCC coastal development permit. The CCC would review the project's consistency with policies in the Sand City Local Coastal Plan (LCP) and the CCA through this permit process. The CCA has specific policies that address protection of marine and terrestrial biological resources, public access and recreation, water quality, visual impacts, agricultural lands, commercial fisheries, industrial uses, power plants, ports, and public works. Conversations with CCC staff (Ewing and Luster pers. comms.) made it clear that desalination projects in the coastal zone are reviewed on a case-by-case basis. There are no policies that encourage or reject the location of desalination plants in the coastal zone; each must be reviewed in light of its consistency with the policies mentioned above (Luster pers. comm.). There is no evidence that a well-planned 95-10 Project would be unlikely to receive a coastal development permit from the CCC. The CCC's guidance for considering desalination facilities along the California coast are contained in a March 2004 document entitled *Seawater Desalination and the California Coastal Act* (California Coastal Commission 2004). In this document, the CCC indicates support for considering subsurface intake of source water where feasible and evaluating use of existing wastewater outfalls for brine disposal. The CCC also suggests it would be concerned about any desalination project that would induce growth in or near the coastal zone.

Private Landowners. Several coastal parcels within the project study area are in private ownership. The largest of these, referred to as the SNG site, is located immediately south of former Fort Ord and north of the Monterey Peninsula Regional Park District park site (see Figure 3). A plan for a coastal development at this site has already been approved by Sand City and is in the final stages of approval through the CCC. A conversation with a representative of SNG determined that the site is not available for major desalination facilities. The current plan does not include such facilities and there is a concern that any changes in site use could lead to added regulatory review of the development that is already proposed. (Ghandour pers. comm.)

Biological Resources

The only element of the proposed project that would directly affect marine biological resources is the discharge of brine through the MRWPCA ocean outfall. The potential for changes in ocean salinity at the outfall site is of concern for larger mobile species such as marine mammals and fish, and smaller micro flora and fauna that are moved through the water column primarily by ocean currents. Salinity changes below the outfall structure, either on the ballast rocks or on the ocean bottom, are also of concern for non-mobile species that attach to the rocks or live on or within the ocean's sandy or muddy substrate.